

WHAT IS CLAIMED IS:

1. A disk cartridge, comprising:

a disk for storing data;

a cartridge for containing the disk in a rotatable manner, complete with a read/write window through which read/write means of an optical disk read/write device makes internal access;

a shutter which, when the cartridge is inserted into the optical disk read/write device and the read/write window is opened, slides on the cartridge in a direction opposite to a direction of the insertion as a result of the insertion; and

a lock member for engaging with the shutter to prevent the shutter from moving when the shutter is closed and disengaging from the shutter as a result of the insertion of the cartridge;

wherein

the lock member includes:

an engagement section for engaging with the shutter near a side face of the cartridge;

a lever section which rotates around a rotation support point which is located closer to a middle front part of the cartridge in terms of the direction of the insertion than is the engagement section; and

a spring section, rooted at the lever section, opposite the engagement section, between the engagement section and the rotation support point to extend towards and past the rotation support point, for pressing the lever section to apply thereto a rotational force in such a direction that the lever section can engage with the shutter.

2. The disk cartridge as set forth in claim 1, wherein:

a tip of the spring section of the lock member is displaced on a wall, of the cartridge, for receiving the tip of the spring section of the lock member;

an angle of the wall, of the cartridge, for receiving the tip of the spring section is specified equal to an angle between (i) a position of a tip of the spring section of the lock member displaced by an amount equivalent to a predetermined load when the lock member is in engagement with the shutter and (ii) a position of the tip of the spring section when the lock member is not in engagement, the position being an addition of an angular displacement of the spring section when the lock member is in engagement and an angle less than half the angular displacement of the lock member.

3. The disk cartridge as set forth in claim 1, wherein:

the tip of the spring section is provided in a movable manner; and

the cartridge has a regulator section for regulating movement of the tip.

4. The disk cartridge as set forth in claim 3, further comprising a sliding section provided on the tip of the spring section.

5. The disk cartridge as set forth in claim 3, wherein the regulator section satisfies an equation:

$$X < A + B$$

where X is an angle between the lever section and the spring section when the lock member is not in engagement, A is an angle between the lever section and the spring section when the lock member is in engagement, and B is an angle by which the lock member is displaced when the lock member is released from engagement.

6. The disk cartridge as set forth in claim 5, further comprising a sliding section provided on the tip of the spring section.

7. The disk cartridge as set forth in claim 5, wherein

$$X < A + (1/2) \times B.$$

8. The disk cartridge as set forth in claim 7, further comprising a sliding section provided on the tip of the spring section.

9. A disk cartridge, comprising:

a disk for storing data;

a cartridge for containing the disk in a rotatable manner, complete with a read/write window through which read/write means of an optical disk read/write device makes internal access;

a shutter which, when the cartridge is inserted into the optical disk read/write device and the read/write window is opened, slides on the cartridge in a direction opposite to a direction of the insertion as a result of the insertion; and

a lock member for engaging with the shutter to prevent the shutter from moving when the shutter is closed and disengaging from the shutter as a result of the insertion of the cartridge;

wherein

the lock member includes:

an engagement section for engaging with the shutter near a side face of the cartridge;

a lever section which rotates around a rotation support point which is located closer to a middle front

part of the cartridge in terms of the direction of the insertion than is the engagement section; and

a spring section for pressing the lever section to apply thereto a rotational force in such a direction that the lever section can engage with the shutter, the spring section being adapted so that a pressing force applied to the lever section by the spring section as a result of the lock member being released from the engagement with the shutter is smaller than a pressing force applied as a result of a change in an angle between the spring section and the lever section, the change being equal to an angle by which the lock member is displaced when the lock member is released from the engagement.

10. A disk cartridge, comprising:

a disk for storing data;

a cartridge for containing the disk in a rotatable manner; complete with a read/write window through which read/write means of an optical disk read/write device makes internal access;

a shutter which slides parallel to a direction of insertion of the cartridge into the optical disk read/write device to open/close the read/write window; and

a lock member for engaging with the shutter to

prevent the shutter from moving when the shutter is closed and rotating around a rotation support point provided inside a cartridge-side groove formed on a side face of the cartridge near a front of the cartridge in terms of the direction of insertion,

wherein

the lock member of the cartridge is provided facing inwards on a side face of a cartridge holder in the optical disk read/write device and is adapted so that a contact surface where the lock member contacts an unlocking member for releasing the lock member from the engagement with the shutter when the cartridge is inserted has a perpendicular surface in the direction of the insertion of the cartridge.

11. The disk cartridge as set forth in claim 10, wherein:

the shutter has a shutter window section carved out for engaging with a shutter-moving protuberance of the cartridge holder as a result of insertion of the cartridge into the cartridge holder to cause the shutter to slide and open/close; and

the lock member is adapted so that the shutter-moving protuberance is caught in the shutter window section when the unlocking member of the cartridge holder

is in contact with the contact surface of the lock member.

12. The disk cartridge as set forth in claim 10, wherein the lock member is disposed so that when the shutter is closed, the position of a side face opposite the unlocking member which is located closer to a front in terms of the direction of the insertion than is the contact surface for the unlocking member is inside a depth position of the unlocking member inserted in the cartridge-side groove formed on a side face of the cartridge.

13. The disk cartridge as set forth in claim 12, wherein:

the shutter has a shutter window section carved out for engaging with a shutter-moving protuberance of the cartridge holder as a result of insertion of the cartridge into the cartridge holder to cause the shutter to slide and open/close; and

the lock member is adapted so that the shutter-moving protuberance is caught in the shutter window section when the unlocking member of the cartridge holder is in contact with the contact surface of the lock member.

14. An optical disk read/write device in which the disk cartridge as set forth in claim 10 is loaded, wherein

a part of the unlocking member where the unlocking member contacts the lock member is provided substantially parallel to the contact surface of the lock member.

15. An optical disk read/write device in which the disk cartridge as set forth in claim 11 is loaded, wherein

the shutter-moving protuberance of the cartridge holder is adapted so as to be caught in the shutter window section carved out of the shutter when the unlocking member of the cartridge holder is in contact with the contact surface of the lock member.

16. An optical disk read/write device in which the disk cartridge as set forth in claim 12 is loaded, wherein

the unlocking member is adapted so as to remain out of contact from a side face of the lock member until the unlocking member contacts the contact surface of the lock member.

17. An optical disk read/write device in which the disk cartridge as set forth in claim 12 is loaded, wherein

the unlocking member is adapted so that when the shutter is closed, the depth position of the unlocking

member inserted in the cartridge-side groove formed on a side face of the cartridge is outside the position of a side face opposite the unlocking member which is located closer to a front in terms of the direction of the insertion than is the contact surface of the lock member for the unlocking member.

18. An optical disk read/write device in which the disk cartridge as set forth in claim 13 is loaded, wherein

the shutter-moving protuberance of the cartridge holder is adapted so as to be caught in the shutter window section carved out of the shutter when the unlocking member of the cartridge holder is in contact with the contact surface of the lock member.